

ABSTRACT OF THE DISCLOSURE

An atomic layer deposition method includes positioning a semiconductor substrate within an atomic layer deposition chamber. A first deposition precursor is fed to the chamber under first vacuum conditions effective to form a first monolayer on the substrate. The first vacuum conditions are maintained at least in part by a first non-roughing vacuum pump connected to the chamber and through which at least some of the first deposition precursor flows. After forming the first monolayer, a purge gas is fed to the chamber under second vacuum conditions maintained at least in part by a second non-roughing vacuum pump connected to the chamber which is different from the first non-roughing vacuum pump and through which at least some of the purge gas flows. An atomic layer deposition apparatus is disclosed.